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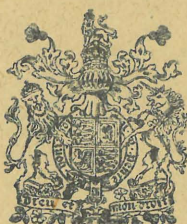
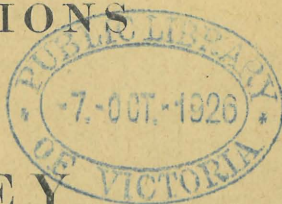
INSTRUCTIONS

AS TO THE

SURVEY

OF

MASTER'S AND CREW SPACES.



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LONDON:

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INTRODUCTORY NOTE.

These Instructions are drawn up for the guidance of Surveyors in securing compliance with the provisions of the Merchant Shipping Acts which require that every place in a ship occupied by seamen or apprentices shall be such as to make the space which it is required to contain, available for the proper accommodation of the men who are to occupy it.

It is from every point of view desirable that the arrangements made for the health and comfort of the officers and crew should be as efficient as the circumstances of each particular case will permit. The Board of Trade recognise that many shipowners do already provide accommodation for their crews in excess of the requirements of the Statutes and the Instructions, and it is to the interest of all concerned that as high a standard as practicable should be adopted in all cases.

The position in which crew space is situated in the ship is a matter of great importance from a health point of view. It is comparatively easy to secure compliance with the statutory requirements, and in particular to ensure, under service conditions, an abundance of fresh air and natural light in all circumstances, when the quarters are situated above deck in houses or in poops; but it is more difficult to do so in spaces situated in the extreme fore part of the ship beneath an anchor deck. Accommodation on deck for the crew is already provided on many vessels with advantageous results, and the Board of Trade strongly recommend that the question of accommodating the crew in spaces above deck should be carefully considered by shipowners and builders with a view to such accommodation being provided in all suitable cases.

The regular cleansing and painting of spaces used by the crew is also a matter of importance.

INSTRUCTIONS

AS TO THE

SURVEY

OF

MASTER'S AND CREW SPACES.

1. Authority for instructions.—These instructions are issued by the Board of Trade for the guidance of their Surveyors in surveying crew space.

2. Law relating to crew space.—The principal provisions of the Merchant Shipping Acts dealing with this subject are printed in Appendix A, page 24.

3. What the Acts require.—Every place in any British ship occupied by seamen or apprentices and appropriated to their use must have a prescribed amount of superficial and cubic space for each seaman and apprentice; it must be available for the proper accommodation of the men; it must be securely constructed; properly lighted and ventilated; properly protected from weather and sea; and properly protected from effluvium.

These requirements must be complied with in every case, whether a deduction from tonnage in respect of the crew space is claimed or not.

If a deduction from tonnage is claimed, it is necessary, in addition, that proper privy accommodation should be provided, and that the space should be properly marked.

If the requirements are not complied with, no deduction from tonnage can be allowed in respect of the space, and any deduction that may have been made in respect of the space must be disallowed. In addition, the owner of the ship is liable to a fine not exceeding £20.

If a deduction from tonnage is not required in respect of a crew space, all the requirements of the Acts must be complied with except those relating to privy accommodation and marking, and failure to comply with the requirements renders the owner liable to a fine not exceeding £20.

4. Crew space to be kept free of goods and stores.—Every place occupied by seamen and apprentices and appropriated to their use must, whether the space is deducted from tonnage or not, be kept free from goods and stores of any kind not being the personal property of the crew in use during the voyage ; and if any such place is not so kept free the master will be liable to forfeit and pay to each seaman or apprentice lodged in that place the sum of one shilling for each day during which, after complaint has been made to him by any two or more of the seamen so lodged, it is not kept free.

5. Inspection of crew spaces by Surveyors.—It is the duty of the Surveyors to see that the requirements of the Acts and of these instructions are complied with, and for this purpose the crew spaces must be inspected whenever a vessel is registered or re-registered, whenever any complaint is made concerning them, or whenever from any cause the Surveyor has reason to suspect that they fail in any way to comply with the provisions of the Acts or of these instructions. Apart from these occasions on which an inspection must be made, the Surveyors should inspect the crew spaces of the vessels in their district as often as their other duties will permit.

6. Procedure for dealing with defects.—If on inspection the crew spaces are found to be unsatisfactory, the defects should be notified on the form Surveys 70 to the builders, owners, or master as the case may be ; and if steps are not taken to remedy these defects before the measurement of the vessel is completed (in cases of registry or re-registry) or, in other cases, before the vessel sails, the following procedure should be adopted :—

(1) No deduction from tonnage can be allowed in respect of the crew spaces concerned and in cases where deduction has already been allowed a report on the form Surs. 62 should be forwarded to the Registrar of Shipping at the port where the vessel is, in order that the deduction may be disallowed. A copy of this report should at the same time be sent to the Principal Surveyor for Tonnage.

(2) If no deduction is claimed in respect of spaces which are unsatisfactory and also in cases where the defects are grave or of long standing, a special report should be sent to the Board of Trade in order that the question of instituting proceedings may be considered.

7. What ships are affected.—The provisions as to crew space apply to all British ships, except ships belonging to the three general lighthouse authorities, pleasure yachts, and fishing boats exclusively employed in fishing on the

coasts of the United Kingdom. (See sections 210, 262 and 263 of the Merchant Shipping Act, 1894.) The expression "ship" includes every description of vessel used in navigation not propelled by oars. (See section 742.)

8. Definition of "seaman."—The provisions as to crew space apply to every place in any British ship occupied by seamen or apprentices and appropriated to their use. The expression "seaman" includes every person (except masters, pilots and apprentices) employed or engaged in any capacity on board any ship. (Section 742.) The space occupied by masters is dealt with separately, *see* paragraph 38.

9. Amount of space.—Section 210 of the Merchant Shipping Act, 1894, provides that there must be for each man a space of not less than 72 cubic feet and 12 superficial feet. Section 64 of the Merchant Shipping Act, 1906, which came into operation on June 1st, 1907, increases this amount in the case of new ships to 120 cubic feet and 15 superficial feet.

This latter section does not apply (1) to ships registered before December 21st, 1906; (2) to ships which were in course of construction on January 1st, 1907; (3) to ships of not more than 300 tons net; or (4) to any fishing boat within the meaning of Part IV. of the 1894 Act*; and the section does not require any additional space to be given in the case of places occupied solely by lascars and appropriated to their use.

These five classes of cases will continue to be governed by the Act of 1894.

Under the Act of 1906 the Surveyor may take into account the space occupied by any mess rooms, bath rooms, or washing places appropriated exclusively to the use of the seamen and apprentices, so, however, that the space in any place appropriated to the use of seamen and apprentices in which they sleep is not less than 72 cubic feet and 12 superficial feet for each seaman and apprentice.

10. Number for which a space may be certified.—Spaces appropriated for officers or crew must not be certified to accommodate a larger number of seamen than those for whom bunk or hammock fittings are provided; and deduction must not be allowed for any space in which the number of bunks or hammock fittings is in excess of the number of seamen certified for. (See paragraph 23.)

* In Part IV. of the Merchant Shipping Act, 1894, unless the context otherwise requires, the expression "fishing boat" means a vessel of whatever size and in whatever way propelled, which is for the time being employed in sea fishing, or in the sea fishing service, but save as otherwise expressly provided, that expression shall not include a vessel used for catching fish otherwise than for profit. (Merchant Shipping Act, 1894, section 370.)

Surveyors are expected, especially in the case of new ships, to take opportunities of inspecting the agreements of ships in order to see whether the number of officers and men engaged corresponds with the number for whom the spaces have been certified.

11. What spaces may be regarded as crew spaces.—No deduction can be allowed in respect of any space which has not first been included in the measurement of tonnage*; and no space can be deducted as crew space which has been already included in the tonnage allowance for propelling power.

Subject to these conditions, every space occupied by seamen and apprentices and appropriated exclusively to their use, that complies with the requirements of the Acts and with these instructions, may be regarded as crew space and measured and deducted from tonnage.

The deductible spaces may consist of sleeping-rooms, mess-rooms, bath-rooms, washing places, oilskin or overall rooms or lockers, pantries, food lockers, drying room, and hospital, together with any passageways exclusively used for access to these places. But spaces used for the working of the helm, capstan, anchor-gear, steam pumps &c., cannot be certified as complying with the requirements.

Galleys, wherever situated, are not to be regarded as being crew space.

Cabins appropriated to officers should be as far removed as is reasonably possible from pantries or other noisy working spaces.

In ships having a wireless installation particular care is to be taken to see that the accumulators are not placed in the operator's sleeping accommodation or in the wireless operating room; but are so placed that the fumes will have no harmful effect.

12. Spaces not to be included in the measurement.—Such parts of a space as are not available for the proper accommodation of the men who are to occupy it are not to be included in the measurement, such, for instance, as the narrow triangular spaces at the forward extremity of forecastles, or the recessed places under ladder-ways, which are too narrow and confined for men to stand or move about in. The Surveyor should not measure past the inner side of gutter water-ways, or inner edge of raised covering boards, or, if the sides tumble home,

* See Section 77 (4) of the Merchant Shipping Act, 1894. It should be remembered that all crew spaces situated above the upper deck of vessels measured and registered before the 1st January, 1868, were, to the extent of one-twentieth of the vessel's remaining tonnage, excluded from the register tonnage. In the case of these vessels, therefore, special care is necessary to see that no deduction is allowed in respect of any space which has not first been included in the measurement of tonnage.

past the greatest tumble home of the ship's side, unless the under sides of the deck beams are more than 6 feet above the floor ; in that case, a vertical line from the floor meeting the side at a height of 6 feet will be the outer boundary of the measurement.

13. Strength and security of crew space.—Deck erections which extend from side to side and form part of the original and permanent structure of the vessel will in most cases be found to be sufficiently strong and secure, and the Surveyor will only have to search for defects resulting from decay or accident ; but when the seamen are berthed in a deck house, or other erection which has been raised upon or added to the original structure of the vessel, it will be necessary to examine carefully the mode in which the deck-house or erection is built, fitted, and secured, and also to ascertain that it is sufficiently strong to withstand the force of heavy seas which may strike upon or against it. This examination of the strength and security of deck-houses and companions will be especially necessary in the case of the smaller class of sailing vessels.

14. Lamp rooms and oil and paint stores.—In deciding whether or not a crew space is so arranged as to be in every way fit for the proper accommodation of the crew, due regard should be had to the construction and position of the rooms used for trimming and lighting the lamps, or for storing inflammable oils or paints in any quantity. These should not be such as to cause either danger or serious discomfort to the crew, or prevent their ready escape in case of fire. If practicable such rooms should be placed above deck and well clear of the crew space.

In all new iron or steel vessels, the dividing bulkheads between a crew space and lamp room, oil or paint store, should be of iron or steel. In other cases they may be of wood, properly constructed and lined on the side away from the crew space with asbestos or other fireproof material, covered with sheet iron.

15. Protection from weather and sea.—The Surveyor should see that the sides, ends, floor, and top of the spaces appropriated to seamen and apprentices are properly caulked ; also that the side ports or scuttles are properly fitted and in good condition, and that there is no leakage from the deck or waterway seams, or in way of the fastenings of the deck and deck fittings, or from around the bowsprit, knightheads, catheads, or cattails, fish davits, bulwark stanchions, paulbitt, windlass bits, or capstan spindle. He should also see that the entrance to lower fore-castles is properly protected by a strong companion or booby hatch, built or fitted and secured upon coamings of

sufficient height and strength, and that at the entrance to upper or top-gallant forecastles there is a sufficiently deep and strong cant or coaming and a strong athwartship bulkhead.

In new ships the crew spaces must not be so placed that the hawse holes and cables are situated therein, and there must be no direct communication between chain lockers and crew spaces. Where chain cables are led down from a deck overhead through a crew space, they must be fitted with substantial gastight casings from deck to deck. In iron or steel ships these casings are to be of iron or steel.

Officers' and engineers' cabins should, whenever possible, be so placed that they are entered from a passageway rather than from the open deck.

The Surveyor is referred to the Freeboard tables as regards the question of providing facilities for enabling the crew to get to and from their quarters in ships having detached superstructures.

Surveyors should take every opportunity of pointing out to builders and owners that compliance with the Regulations and these Instructions can, as a rule, be more readily effected, and better maintained subsequently under the conditions which prevail at sea, when the men are berthed above deck in houses or poops, rather than in forecastles.

16. Where the number of deck hands (exclusive of petty officers) is over twelve men, or of firemen (exclusive of petty officers and greasers) over eighteen men, it is recommended that separate sleeping places for each watch of the deck or engine room department (as the case may be) should be provided.

Where the number in the stewards' department is over sixteen, it is recommended that separate sleeping places should be provided, none of which should accommodate more than sixteen men.

The bulkheads dividing such sleeping places are to be of steel extending from the underside of the beams to within a few inches of the floor to enable the deck to be flushed with a hose. The flooring is to be laid as described in paragraph 22. All bare iron or steel surfaces of the boundary bulkheads (other than internal divisional bulkheads), ship's side and overhead deck within the living quarters are to be covered with cork cement.

17. Means for affording light.—Every place appropriated to the use of the crew must be properly lighted. To ensure that this will be the case under the ordinary conditions of a vessel's employment, it will generally be necessary to have so much provision for natural light when the ship is new and the paint clean, that it will be possible in clear weather to read the print of an ordinary newspaper in any part of the space. This standard is to be regarded as

a minimum and should be strictly observed when surveying the crew spaces of all new vessels.

If in any case there is not sufficient natural light to admit of these conditions, a report with full details and a plan should be forwarded to the Board of Trade.

If in spaces otherwise suitable for accommodation it is impracticable to provide sufficient natural light, electric lighting may be accepted under approved conditions.

Generally the best means of providing natural light is by side scuttles, which have the additional advantage of furnishing ventilation in hot climates while the ship is in port, and for this reason they should be made to open. Surveyors should see that the bunks and other fittings are so arranged as not to obscure the light, and should remember that while in some places, such as the ends of poops, fore-castles, and bridge-houses, and in the sides or ends of deck houses the size of scuttles may be as large as convenient, yet when they go through the side plating, the structural strength of the ship may be affected by them, and a larger diameter than 10 inches should not be required. In the extreme forward part of the ship it may sometimes be undesirable to have them so large as 10 inches and they will often require guards to protect them from the anchor gear &c.

Where side scuttles in a crew space are fitted in the plating of the ship's side below the upper deck, they should in all cases be protected by hinged dead-lights, and in order to ensure that side scuttles remain efficient the frames and fittings should be made of such material that they will not be liable to be set fast by corrosion. In passenger steamers the side scuttles must conform to the requirements of paragraphs 59 and 60 of the Instructions as to the Survey of Passenger Steamships.

Another means of supplying light is by skylights, which are particularly suitable for mess-rooms; they should be strongly constructed, and if fitted in exposed positions, the light should be admitted by thick bulls-eyes.

Skylights should always be made to open, with a view to providing additional ventilation, such as is necessary when the ship is in port in a hot climate.

The supply of light by means of glass prisms or bulls-eyes in the deck should be generally discouraged owing to the great difficulty of keeping them tight under service conditions. In cases, however, where it is impracticable to obtain the requisite amount of light by other means, or in small vessels where side scuttles would be too near the water, suitable deck lights may be passed.

In all vessels having an electric lighting installation the crew spaces are to be fitted with electric lamps sufficient in

number and power for properly lighting the spaces at sea during the night and in dull weather.

Acetylene lighting in crew spaces is only permitted on compliance with the conditions contained in Appendix B to these Instructions.

18. Ventilation.—The proper ventilation of every space appropriated to the officers or crew is one of the most important points the Surveyor has to consider and decide upon in connection with crew space inspection. No hard and fast rule can be laid down as to the system of ventilation to be adopted; but, whether the accommodation consists of a forecastle, poop, houses, or cabins, there should not be less than two ventilators, one serving as an inlet for the admission of fresh air, and the other as an outlet for the escape of impure air.

The ventilators should be placed in such positions that they can be kept open in any ordinary weather and must be fitted clear of the bunks in such positions as to cause no discomfort to the occupants. Should this, however, be found impracticable in any case, a substantial and permanent trunk must be fitted to convey the air clear of the bunk.

In ventilating forecastles, poops and 'tween deck spaces, the simplest method is to have an iron pipe with a revolving cowl fitted at each end of the space, so that while impure air escapes at one, pure and fresh air will enter at the other, and a constant circulation be kept up. When this method is adopted one of the ventilators should pass through the deck to at least the lower edge of the beams. The cowls should be fitted to unship, and caps provided for fitting over the pipes when necessary. In the case of lower forecastles the cowls should be at least as high as the bulwarks.

Mushroom ventilators may be fitted for ventilating deck houses, but they may not be fitted to forecastles unless they are at least 30 inches high in the case of top-gallant forecastles; if they are fitted to lower forecastles they should be at least as high as the bulwarks.

Wherever practicable all cabins should have an efficient ventilator of cowl, mushroom, or swan neck pattern fitted in the deck above them, or an equivalent arrangement.

The minimum diameter of overhead ventilators to sleeping or messing accommodation is fixed at 5 inches.

The cowl ventilators to a compartment, or their equivalents should have an aggregate clear area of at least 6 square inches for each person accommodated in the compartment; that is, 3 square inches as inlet and an equal amount as outlet.

In hospitals which must always be ventilated independently to the open air there must be at least 5 square

inches of inlet and 5 of outlet area for each person. *See* paragraph 27.

Scuttles, companions, doors and other apertures not built solely for ventilation are not to be considered as efficient means of ventilating crew spaces.

Skylights made to open, although useful on occasion as a supplementary means of ventilating the spaces over which they are fitted, cannot be relied upon as efficient ventilators available under all conditions of weather; and they should not be accepted in place of the ventilators ordinarily required.

Where a fore-castle or deck-house is divided by a fore-and-aft bulkhead or close partition, care must be taken that the ventilation of each space is complete in itself.

In all vessels likely to be employed in tropical climates there should be some suitable aperture in the deck over each space appropriated to seamen and firemen, to admit of a wind sail not less than 18 inches in diameter being introduced. This may be effected by means of a skylight properly protected, or by a hatch, or by an opening in the deck, means being provided for effectually closing it at sea; any other equally efficient arrangement for introducing a wind sail may be adopted.

Surveyors should point out to owners and builders that if the vessel is employed in the tropics the above arrangement for the introduction of wind sails may be insisted on abroad if not found to be already provided.

Waterclosets should be ventilated in a suitable manner direct to the open air, but it will not always be necessary to fit cowls or mushrooms for this purpose. *See* paragraph 25.

Bathrooms, washing places, drying rooms, overall and oilskin lockers should also be suitably ventilated.

In all cases separate flanges or coamings must be fitted in the deck over forecastles or other crew spaces for the funnels of bogies or fire stoves placed therein. Cowl or other ventilators must not be utilised for this purpose, but are to be kept exclusively for ventilating the spaces.

Whenever it is proposed to ventilate the quarters by a mechanical system, full details of the arrangements with drawings should be forwarded for approval and no such system should be approved unless it secures efficient ventilation.

Should any difficulty be experienced in securing compliance with the foregoing requirements, the Surveyor should consult the Principal Officer regarding the case, and, if necessary, submit the particulars of it accompanied by a sketch for the Board's consideration.

19. Iron or steel decks overhead.—Where there is an iron or steel deck overhead in a crew space, it must be sheathed on the upper side with wood, securely fastened and caulked. The wood deck need not exceed $2\frac{1}{2}$ inches in thickness. Or, alternatively, the deck may be sheathed with an approved wood substitute laid under approved conditions and not less than 2 inches in thickness. If there are iron bollards or other fittings preventing the complete sheathing of the deck, no portion of a sleeping bunk may be placed immediately under them (except where, in the case of an isolated bollard, an efficient lining is fitted close to the base of the bollard) and the under side of the deck in such places should be efficiently coated with cork cement. Gutter waterways should be rounded out with cement, or a wood substitute, of not less than $1\frac{1}{2}$ inches thickness. When this is done the under side of the stringer in the crew space in way of the gutter should be cork-cemented.

In iron and steel ships, Surveyors should discourage lining underneath the decks or on the sides of spaces appropriated to seamen and firemen, as it is often a harbour for vermin. In no case should lining be sanctioned unless it is fitted close to the deck.

In new iron and steel ships, all bare iron or steel surfaces of the boundary bulkheads (other than internal divisional bulkheads), ship's side and overhead deck within the crew spaces are to be covered with cork cement to the Surveyor's satisfaction.

20. Height.—In determining whether a place is available for the proper accommodation of the men who are to occupy it, the Surveyor will see whether the place is of sufficient height for men of ordinary stature to stand and move about in an upright position, that is to say, at least 5 feet 6 inches (in new ships 6 feet) between the floor and the under side of the beams, and also of such height that the sleeping bunks being arranged in tiers the bottom of the lower tier will be not less than 12 inches (in new ships 15 inches) from the floor, and the bottom of the upper tier at a distance of not less than 2 feet 6 inches from the bottom of the tier below as well as from the deck overhead. The bottom of any bunk must not be less than about 12 inches (in new ships 15 inches) from the floor. In any case in which there is any difficulty in this respect the Surveyor should report the matter to the Board of Trade. *See also* paragraph 23.

21. Drainage.—The Surveyor will see that subject to the avoidance of conflict with Regulations affecting the seaworthiness of the ship there are holes sufficient in number and size, through the cant or coaming of upper forecastles and deck-houses to admit of a ready escape of water, and

that there are plugs with lanyards or chain attached fitted to each hole. Where such drainage passes through a privy or other compartment, it will be necessary to have a pipe for the drainage to pass through such privy or compartment with the pipe made perfectly tight through the cant or coaming of the fore-castle.

In iron or steel ships scuppers of good size and provided with screw covers attached by chains should be fitted for draining wash deck water overboard.

22. Protection from effluvium.—Every place occupied by seamen must as far as practicable be properly shut off and protected from effluvium which may be caused by cargo or bilge water. The Surveyors must therefore see that the bulkheads, sides and decks of the crew space are so fitted, and are of such thickness, that this provision is complied with.

The bulkheads, if made of wood, should be constructed of well-seasoned material, and besides being tongued and grooved, should be doubled with felt between or battened over the seams with felt under the battens. This should specially be attended to in cases where in a wooden ship a water-closet adjoins a crew space.

If a galley adjoins the crew space, the bulkhead, if of wood, must be doubled, with felt between the doubling and the bulkhead.

Where the crew space abuts on a galley, a donkey boiler space, or on any part of the engine or boiler casings, a wood lining of an approved insulating material should be fitted of not less than 3 inches in depth between it and the iron or steel bulkhead, and the space should be filled with non-conducting material. As far as possible, however, such positions for crew spaces should be avoided.

Decks which form the floor of crew spaces are to be of wood, not less than $2\frac{1}{2}$ inches thick, properly laid and caulked. Or, alternatively, the flooring is to consist of an approved composition laid on an iron or steel deck under conditions approved by the Board of Trade. Loose boards on an iron deck are not to be passed, nor are planks laid on quartering over an iron deck, unless the space between the grounds be filled in solid with proper cement.

Scuttles or hatchways opening into a store-room underneath crew's quarters should not be permitted, unless they are fitted with proper covers or hatches so that the store-room, or hold underneath is sufficiently shut off.

In no case is direct communication to be allowed either by scuttles or doorways between the crew's living quarters and the compartments in which boilers, machinery or steam pumps are placed. Nor are accesses to coffer dams or oil fuel spaces to be situated within the crew spaces.

Where a crew space is situated on a steel deck forming the crown of an oil fuel or oil cargo space the Surveyor must satisfy himself that such deck is thoroughly oiltight, that no manholes or other openings to the oil spaces are situated within the crew spaces, that the steel deck is properly sheathed with an approved non-inflammable composition at least $1\frac{1}{2}$ inches thick and that the crew spaces are specially well ventilated.

In the case of vessels carrying offensive cargoes, the bulkhead between the crew space and the cargo space should be a single bulkhead, practically gas-tight, made either of steel or of two thicknesses of wood, tongued and grooved, with a layer of felt and coal-tar between, and with angle strips of lead on both sides of the bulkhead all round its boundary to prevent loss of tightness due to working.

Any case in which it appears that the crew space is not sufficiently protected from the danger of effluvia arising from an offensive cargo, and that additional measures should be taken to prevent such danger, should be reported to the Board of Trade for instructions.

23. Bunks.—No bunk should be less than 6 feet in length and 2 feet in width, inside size.

Every bunk must be so arranged that it can be entered in a proper manner from the side, no access across an adjoining bunk being allowed.

Bunks should, except where intended for the use of Asiatic seamen, be of metal of fixed or folding pattern and fitted with metal mattresses and/or lath bottoms. The lee, head and footrails and backrails to be of tubing except when the backrail comes in contact with a bulkhead or the ship's side, when it may be of wood, not less than 9 inches deep and portable.

24. Heating arrangements.—Proper provision is to be made for heating all the crew spaces of vessels in cold weather. This may be effected either by fitting electric, steam, or hot water heating apparatus having the necessary fittings for regulating purposes; or by the provision of suitable stoves.

Where heating stoves are provided care must be taken to prevent the escape into the living spaces of noxious fumes or gases. This may be effected by fitting the damper with a stop to prevent it from being completely closed, or by any other equally effective device. Separate flanges or coamings for the funnels must be fitted in the deck over the space as provided for in paragraph 18.

25. Privy accommodation.—Crew space cannot be deducted from tonnage unless there are in the ship properly

constructed privies of such number and construction as may be approved by the Surveyor.

The number of privies or seats required should be in the proportion of one for every 10 men certified for, exclusive of officers, subject to the following modifications :—

In cases where the crew spaces are certified for more than 100 men exclusive of officers, there should be ten privies or seats for the first 100, and for any additional number, exclusive of officers, the privies or seats should be increased at the rate of four per cent.

In small vessels where the total number certified for, inclusive of officers, falls short of 20 men, two privies or seats will be considered sufficient; and when less than 10 men are certified for, inclusive of officers, only one privy will be required.

In new ships single seat waterclosets, properly partitioned off from each other, are to be provided. The pans may be of enamelled iron or heavy glazed stoneware, of the hopper type with hard wood rims or seat pads.

Each watercloset to have a waterseal and separate flushing arrangements with an ample flush of water.

Whenever practicable a tank or tanks so situated as to provide the necessary head of water is to be fed by a sanitary pump or pumps and connected with the flushing cistern overhead in the watercloset by a permanent system of pipes which should be separate and distinct from the wash deck or fire service. In other cases the Surveyor should approve such reasonable arrangements as may be made for supplying the flushing cisterns.

In existing ships not complying with the foregoing standard such improvements in the waterclosets as are practicable and reasonable should with a view to their adoption be pointed out to the owners and masters whenever a surveyor visits a ship during heavy repairs, periodical survey, or remeasurement of tonnage.

Soil pipes must not be less than 4 inches diameter in the clear, and are to be fitted with a screw cap for cleaning purposes. They should have a direct overboard outfall with storm valves where the position permits of this arrangement.

When Asiatic or African crews are to be carried a special type of watercloset with proper flushing arrangements may be fitted to meet their habits, and for their exclusive use. A linear measurement of 18 inches may be accepted as equivalent to one privy or seat.

The Surveyor should see that the privies are so built, fitted, and situated that no unpleasant smell from them will enter the places occupied by the crew.

All w.c.'s should be ventilated direct to the open air.

Care should be taken that when entered from a passageway leading to crew spaces the w.c. door is solid and closely fitted and the passageway suitably ventilated. In steel vessels the bulkheads of the crew's w.c.'s should in all cases be of steel, but if the w.c. (or combined bathroom and w.c.) is for the use of the officers or the master, and is either entered from or adjoins a passageway leading to the sleeping and messing accommodation, only those of its bulkheads which divide it from adjoining living spaces are required to be of steel; and those next the passageway, if substantially constructed of well-seasoned material and virtually gas-tight, may be accepted when built of wood.

If a w.c., or combined bathroom and w.c., opens direct into a space appropriated for the master, officers or crew, no deduction can be allowed for either space so situated (except in cases where arrangements are so made for the master or officers of the ship in private suites) and Surveyors should use their influence, even though no deduction is claimed in respect of the spaces, to discourage such an objectionable arrangement. The owners' attention should be drawn to the matter in the usual way by issuing a Form Surveys 70.

In vessels under 150 feet in length with low bulwarks it may be found difficult to provide an enclosed watercloset with proper flushing arrangements such as may be easily fitted in larger vessels.

In such cases the surveyor should, if deduction is claimed on account of the crew space, report the circumstances which render the ordinary arrangement impracticable together with the owners or builders' proposals for fitting the vessel with a properly constructed watercloset.

Pending the Board's approval of the proposals no deduction from tonnage should be allowed.

Properly and efficiently constructed water closets situated below the upper deck and included in the under deck tonnage, if solely appropriated for the use of the officers or crew, may be included in the crew space deductions, or in that allowed for the master's accommodation.

26. Messrooms, bathrooms, and washing places, etc.—In estimating the space available for the proper accommodation of seamen and apprentices, there may be taken into account the space occupied by any mess rooms, rooms fitted with baths and/or showers, or washing places, appropriated exclusively to the use of those seamen and apprentices, so, however, that the space in any place appropriated to the use of seamen or apprentices in which they sleep is not less than seventy-two cubic feet and twelve superficial feet for each seaman or apprentice.

Where no separate messroom is provided for the men suitable tables and seats must be fitted in the living quarters.

In vessels making short voyages where the crew provide their own food, provision lockers must be fitted; these whenever practicable should be outside the sleeping quarters and should be suitably ventilated. In all cases they must be exclusively used for provisions and must not be placed against steam pipes or wooden chain pipes or in any other unsuitable position. Such lockers, if certified for crew's use, may be measured and their cubical contents added to the crew space for tonnage deduction.

In new foreign-going ships suitable rooms fitted with baths and/or showers and washing places for the men should be provided.

Provision should be made to ensure daily a sufficient supply of hot fresh water for washing purposes.

Such further separate spaces, as oilskin lockers, overall lockers, and drying room, which are of importance from the point of view of the health and comfort of the men, if properly fitted and set apart exclusively for the use of the crew may be included as crew space for tonnage deduction.

27. Hospitals for the crews.—Whenever in any vessel separate and reserved accommodation of a suitable character for sick or disabled seamen is provided, complying as regards floor area, cubic capacity, construction, lighting, ventilation, etc. with these regulations and instructions, it should be certified as "Crew's hospital" and be included with the deductions made on account of crew space from the tonnage of the vessel.

It is suggested that the number of beds should provide accommodation for at least one man per 50 of the crew.

The space should be heated and the ventilation should be as detailed in paragraph 18. Wash-basins should be fitted and where reasonably practicable a separate W.C. arranged, opening from the hospital.

28. Rule for ascertaining superficial area.—The place being first sufficiently cleared and clean, and in a fit state for measurement, measure the length in a straight line from the foremost boundary of the floor of the crew space (whether such foremost boundary be the stem, or knightheads, or water-way, or breast-hook, or a bulkhead, or that part of the floor beyond which men cannot properly stand or move about) to the aftermost boundary of the floor of the crew space. Divide the length so taken into two equal parts, and at the foremost and aftermost boundaries of the crew space and at the half length, take a breadth across the ship, between the boundaries of the side as defined before; number the breadths so taken as Nos. 1, 2, and 3, commencing with No. 1 as the foremost boundary. Multiply the first and last breadths by one, and the middle

breadth by four. Then multiply the sum of these products by one-third of the distance or common interval between the breadths, and the product will be the gross area of the floor of the crew space. From this gross area deduct the gross area of all incumbrances, such as hatchways, chain pipes, ventilating trunks, etc., and the remainder is to be the clear area of the floor. Divide this clear area by 12 or 15, as the case may be (see paragraph 9), and the quotient will be the number of seamen for which the space will be certified, provided that the cubic capacity of the space, as computed by paragraph 29, is sufficient for this number. The measurements are to be taken in feet and tenths of a foot. Bed bunks or sleeping berths for the crew are not to be deducted as incumbrances, but in cabins there should not be less than 12 or 15 square feet, as the case may be, for each man, exclusive of the bunk.

29. Rule for ascertaining cubic capacity.—

Multiply the clear area of the floor space by the height from deck to deck at the middle line; the product will be the cubic capacity of the crew space. Divide the cubic capacity thus obtained by 120 or 72, as the case may be (see paragraph 9), and the quotient will be the number of men the place is to be certified to accommodate, provided that there is sufficient area of deck, as ascertained under paragraph 28, for this number.

It will be seen that the smaller of the quotients obtained by the two calculations will be the number for which the place is to be certified.

The area and capacity of rectangular deck-houses and cabins may be ascertained by multiplying together their principal dimensions, and in all cases the capacity deducted should agree with the capacity which is included in the gross tonnage.

30. How deduction is to be computed.—

The tonnage allowance on account of crew space is to be ascertained by the following rules:—

- (a.) When the seamen and apprentices are berthed in a lower forecastle or in a forecastle permanently closed in above the upper deck, measure the internal mean length of such space in feet and divide it into two equal parts. Measure at the middle of its height three inside breadths, namely, one at each end and the other at the middle of the length; then to the sum of the end breadths add four times the middle breadth. Multiply the whole sum by one third of the common interval between the breadths. The product will be the mean horizontal area of such space. Multiply this

mean horizontal area by the mean height from deck to deck. Divide the product by 100, and the quotient will be the tonnage allowance for the space.

- (b.) When the seamen and apprentices are berthed in a deck-house or in cabins, multiply together the mean length, breadth, and height of each of the spaces; divide each product by 100, and the quotient will be the tonnage allowance for each of the spaces. In measuring cabins for crew-space accommodation the actual floor must be measured.

In computing the tonnage allowance by either of the above rules, no deduction need be made for chain pipes, ventilating trunks, and other incumbrances which occupy spaces not available for cargo or stores.

31. Marking.—No deduction from tonnage can be authorised unless the crew space is properly marked. The number of men which the place is constructed to accommodate must be permanently cut in a beam inside the place, with the words "Certified to accommodate — seamen." In the case of deck-houses, if the beams are cased, the cutting may be made on the casing. In addition, the same marking must be either cut in, or painted on or over, the doorway or hatchway of the place.

If a place is appropriated to Lascars, and the amount of space allotted is 72 cubic feet and 12 square feet, the marking should be "Certified to accommodate — Lascar seamen."

32. Crew space must be clean and clear.—All crew spaces must be kept in a fit condition for the proper accommodation of the men who occupy them, and any crew space which by reason of its dirty condition does not comply with this regulation should be dealt with by the surveyor on Surveys 70 as usual and if its condition is not remedied forthwith the space should be disallowed.

In order that the action of surveyors may be uniform the following instructions are laid down:—

In addition to a daily cleaning out, crew spaces should be thoroughly cleansed, the partitions, sides, and bunks being washed three to four times a year, and the space should be repainted preferably white, or a light colour, as a rule every two years.

Surveyors are not required to enter a crew space for the purpose of inspecting it unless it is in a sufficiently clean and clear state.

33. Defects to be notified to owner.—During the course of each inspection a note should be made of any

defects which require to be remedied, and a list of these should be sent to the owner, agent, master, or builder, on the form Surveys 70.

When the form is returned a further inspection should be made to see whether the requirements have been satisfactorily complied with.

When the survey has been completed a statement showing the number to be cut in the beam, and cut in or painted over the entrance to the space, should be sent to the owner, agent, master or builder, on the form Surveys 70.

34. Cases of doubt and difficulty.—No deduction from tonnage can be authorised in respect of any space unless it complies in all respects with the Acts and with these instructions.

If there is doubt as to whether a space complies with the instructions, or as to whether it will be actually occupied by the number of men for whom it is claimed, or as to the amount of space which should be included in the measurement, the Surveyor should consult with the Principal Officer of the District, who will, if necessary, submit the case to the Board of Trade.

If the builders request that owing to the special circumstances of the case it may be submitted for special consideration, a full statement of the case and a scale drawing should be forwarded to the Board of Trade.

In order to avoid as far as practicable alterations in the general arrangement of crew spaces when the work is well advanced surveyors should draw the builders' attention to the advantage of submitting plans at an early date.

35. Report to Board of Trade: Surveys 63.—The different measurements and calculations should be recorded by the Surveyor on the inspection form, Surveys 58A. This form should be retained by the Surveyor, but a summary of the measurements and calculations should, in every case in which a deduction is to be made from tonnage in respect of crew space, be forwarded on the form Surveys 63 to the Principal Surveyor for Tonnage.

This report need not be made when no deduction from tonnage is required.

The rank or grade of the persons who occupy places which have been allowed as crew spaces should be inserted on the report on form Surveys 63.

36. Submitting Surveys 63 before completion.—This form Surveys 63 may, before it is completed in all respects, be forwarded to the Principal Surveyor for Tonnage, together with the tonnage formula when this latter is sent up for examination and signature. If this course is followed the form should contain the descriptions,

measurements, and appropriations of the various spaces, and the Surveyors should at the same time submit any question relating to construction, fitting and ventilation which may require decision. When the form is returned to the Surveyor it should be completed before the certificate of survey on the form Surveys 59 is issued to the Registrar of Shipping, and should be forwarded to the Principal Surveyor for Tonnage as soon as the ship's official number is known.

37. Reports to Customs.—Whenever a ship is being registered or re-registered, a certificate to the effect that the crew space has been inspected must be sent to the Registrar of Shipping at the port of registry. If the inspection is in all respects satisfactory the certificate should be given on the form Surveys 61; if it is unsatisfactory, on the form Surveys 62.

Before issuing the certificate on the form Surveys 61 the Surveyor must be satisfied that the provisions of the Acts and of these instructions are complied with in every respect, and that the amount of the tonnage allowance is correct.

38. Master's space.—Any space used exclusively for the accommodation of the master may be deducted from tonnage provided it is reasonable in extent and properly and efficiently constructed for the purpose for which it is intended, and provided that it is properly marked.

Before allowing a deduction in respect of any such space, the Surveyor should be satisfied that it is to be used exclusively for the master, that it is reasonable in extent, and that it complies with these instructions as to strength, lighting, ventilation, etc. There should be permanently marked in or over the space the words "Certified for the accommodation of the master."

It will be noted that it is only when a deduction is claimed for master's space that inspection is required by the Merchant Shipping Acts.

39. Foreign ships.—The tonnage of foreign ships trading to this country has frequently to be ascertained under Rules 1 and 2 of the Act. When Surveyors are called on to inspect the crew spaces of foreign ships they should proceed in the same manner as with British ships, and the spaces should be marked "Certified to accommodate—seamen."

40. Fees and expenses.—The fee to be charged for each inspection of a crew space is 10s., but the aggregate amount of the fees must not exceed £1, whatever be the number of separate visits. When the crew space inspection and the measurement of tonnage are made at the same time, no separate fee can be charged for the inspection.

The Surveyor's expenses should be charged in every case. A note of these expenses, together with a note of any fee which is chargeable, should be sent to the owner, agent, master, or builder on the form Surveys 70; and the fees and expenses must be paid before the certificate with regard to the crew space is issued.

41. Forms.—The following are the forms used in connection with the survey of crew space :—

- Surveys 6. Application for inspection.
- „ 58A. Surveyor's memorandum of inspection.
- „ 61. Surveyor's report to Customs,—law complied with.
- „ 62. Surveyor's report to Customs,—law not complied with.
- „ 63. Surveyor's report to the Board of Trade.
- „ 70. Surveyor's report to owner.

APPENDIX A.

PRINCIPAL PROVISIONS OF THE MERCHANT SHIPPING ACTS RELATING TO MASTER'S AND CREW SPACE.

Merchant Shipping Act, 1894.

77.—(4.) In the measurement of a ship for the purpose of ascertaining her register tonnage, no deduction shall be allowed in respect of any space which has not been first included in the measurement of her tonnage.

79.—(1.) In measuring or re-measuring a ship for the purpose of ascertaining her register tonnage, the following deductions shall be made from the space included in the measurement of the tonnage, namely :—

(a) In the case of any ship—

(i.) any space used exclusively for the accommodation of the master ; and any space occupied by seamen or apprentices and appropriated to their use, which is certified under the regulations scheduled to this Act with regard thereto.

(2.) The deductions allowed under this section, other than a deduction for a space occupied by seamen or apprentices, and certified as aforesaid, shall be subject to the following provisions, namely :—

(a) The space deducted must be certified by a surveyor of ships as reasonable in extent and properly and efficiently constructed for the purpose for which it is intended ;

(b) There must be permanently marked in or over every such space a notice stating the purpose to which it is to be applied, and that whilst so applied it is to be deducted from the tonnage of the ship.

210. Accommodation for seamen.—(1.) Every place in any British ship occupied by seamen or apprentices, and appropriated to their use, shall have for each of those seamen or apprentices a space of not less than seventy-two cubic feet, and of not less than twelve superficial feet measured on the deck or floor of that place, and shall be subject to the regulations in the Sixth Schedule to this Act, and those regulations shall have effect as part of this section, and if any of the foregoing requirements of this section is not complied with in the case of any ship, the owner of the ship shall for each offence be liable to a fine not exceeding twenty pounds.

(2.) Every place so occupied and appropriated shall be kept free from goods and stores of any kind not being the personal property of the crew in use during the voyage, and if any such place is not so kept free, the master shall forfeit and pay to each seaman or apprentice lodged in that place the sum of one shilling for each day during which, after complaint has been made to him by any two or more of the seamen so lodged, it is not so kept free.

(3.) Such fees as the Board of Trade fix shall be paid in respect of an inspection for the purposes of this section, not exceeding the fees specified in the Sixth Schedule to this Act.

SIXTH SCHEDULE.

REGULATIONS TO BE OBSERVED WITH RESPECT TO ACCOMMODATION ON BOARD SHIPS.

(1.) Every place in a ship occupied by seamen or apprentices, and appropriated to their use, shall be such as to make the space which it is required by the Second Part of this Act to contain available for the proper accommodation of the men who are to occupy it, and shall be securely constructed, properly lighted and ventilated, properly protected from weather and sea, and as far as practicable properly shut off and protected from effluvium which may be caused by cargo or bilge water.

(2.) A place so occupied and appropriated as aforesaid shall not authorise a deduction from registered tonnage under the tonnage regulations of this Act unless there be in the ship properly constructed privies for the use of the crew, of such number and of such construction as may be approved by the Surveyor of Ships.

(3.) Every place so occupied and appropriated as aforesaid shall, whenever the ship is registered or re-registered, be inspected by one of the Surveyors of Ships under this Act, who shall, if satisfied that the same is in all respects such as is required by this Act, give to the collector of customs a certificate to that effect, and if the certificate is obtained, but not otherwise, the space shall be deducted from the register tonnage.

(4.) No deduction from tonnage as aforesaid shall be authorized unless there is permanently cut in a beam, and cut in or painted on or over the doorway or hatchway of every place so occupied and appropriated, the number of men which it is constructed to accommodate, with the words "Certified to accommodate seamen."

(5.) Upon any complaint concerning any place so occupied and appropriated as aforesaid, a surveyor of ships may inspect the place, and if he finds that any of the provisions of this Act with respect to the same are not complied with

he shall report the same to the chief officer of customs at the port where the ship is registered, and thereupon the registered tonnage shall be altered, and the deduction aforesaid in respect of space disallowed, unless and until it be certified by the surveyor, or by some other surveyor of ships, that the provisions of this Act in respect of the place are fully complied with.

Maximum Fees for Inspection.

(6.) The fee for each visit to the ship shall not exceed ten shillings.

(7.) The aggregate amount of the fees for any such inspection shall not exceed one pound, whatever be the number of separate visits.

(8.) When the accommodation is inspected at the same time with the measurement of the tonnage, no separate fee shall be charged for the inspection.

Merchant Shipping Act, 1906.

64. Increase of crew space.—(1) Subsection (1) of section two hundred and ten of the principal Act (which provides for the space required for each seaman or apprentice in any place in a British ship occupied by seamen or apprentices and appropriated to their use) shall be construed as if a space of not less than one hundred and twenty cubic feet and of not less than fifteen superficial feet measured on the deck or floor of that place were substituted for a space of not less than seventy-two cubic feet and of not less than twelve superficial feet measured on the deck or floor of that place.

(2) In estimating the space available for the proper accommodation of seamen and apprentices, there may be taken into account the space occupied by any mess room, bath rooms, or washing places appropriated exclusively to the use of those seamen and apprentices, so, however, that the space in any place appropriated to the use of seamen or apprentices in which they sleep is not less than seventy-two cubic feet and twelve superficial feet for each seaman or apprentice.

(3) Nothing in this section shall affect—

(a) any ship registered before the passing of this Act or which was in course of construction on the first day of January nineteen hundred and seven; or

(b) any ship of not more than three hundred tons burden; or

(c) any fishing boat within the meaning of Part IV. of the principal Act,

or require any additional space to be given in the case of places occupied solely by lascars and appropriated to their use.

APPENDIX B.

ACETYLENE FOR LIGHTING PURPOSES.

Surveyors need not raise any objection to the use of Acetylene for the lighting of crew spaces and other closed spaces on board fishing and other vessels provided the following conditions are generally complied with :—

- (1.) The generator should comply with the regulations as to Acetylene Generators issued by the British Acetylene and Welding Association.
- (2.) No copper, compo, or flexible piping should be used for conveying the gas from the generator to the burners. Preferably the pipes should be of solid drawn steel or brass, the former being *tinned* to prevent corrosion, but they should not be *copper plated*. After the pipes have been installed on board, they should be suitably tested, and in no circumstances should a naked light be used.
- (3.) Each generator should be furnished with an automatic cock or other similar contrivance, so that the gas will be automatically shut off the main distributing pipes when the pressure in the generator is practically exhausted.
- (4.) A distribution box should be fitted near the generator, to which the distribution pipes conveying the gas to the various burners should *each* be connected by means of a shut-off cock, so that when the pressure of gas in the generator is exhausted, the entire supply of acetylene can be shut off from the burners. A conspicuous notice should be affixed near the distribution box to the effect that :—

“When the pressure of gas in the generator
“is nearly exhausted, or the generator is out of
“use, the various cocks in the distribution box
“should be shut and should not be opened
“again to any compartment until an assurance
“is given that the burners in that compartment
“are shut.”

- (5.) A properly constructed metal storage container fitted with a jointed cover so that it can be hermetically sealed, should be provided near the generator for the storage of the carbide of calcium.

A conspicuous notice should be affixed near the generator and storage container to the effect that:—
“No Naked Light is allowed near the generator
“or the carbide container.”

- (6.) It is understood that the carbide of calcium is usually delivered on board in the ordinary commercial drums weighing 50 or 100 kilos. For convenience of handling and safety, it is strongly recommended that smaller packages be employed for this purpose. No serious objection need, however, be raised at present to the use of the larger drums provided a suitable eye-bolt is fitted to the engine room skylight and blocks and tackle furnished. The owners should issue a warning to the engine man that immediately the carbide of calcium is delivered, or at any rate before the vessel proceeds to sea, the carbide should be removed from the drum in which it is delivered into the storage container, and, further, that the blocks and tackle *must* be employed to lower the drums into the engine room. Neglect to adopt this simple precaution has resulted in one instance in loss of life and in serious danger to the entire crew.
- (7.) Carbide drums should not be opened by the use of a hammer and chisel, but a suitable carbide drum opener should be used. In handling carbide and charging the generator, care must be taken to avoid the creation of sparks by rough handling or the use of metal rods.
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